AUGUST 19, 1950
Vol. 113 No. 4

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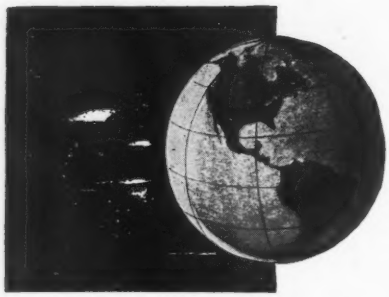

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AMERICAN FERTILIZER

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Vol. 113 AUGUST 19, 1950 No. 4

Table of Contents

	PAGE
EDITORIAL	5
BRITISH REPORT	6–7–8
Recommendations of British Team	8
1951 Is To Be Pasture Year	9–10
Just Plain Corn	10
In The Future	10
New England Pasture Tour	11
Fertilizer Material Market	13
PESTICIDES MARKET LETTER	14
Notes From The Field	16
Studies Underway on Grass	18
International News—India	24
Pacific Coast Fetilizer Round-Up	22

THE COVER: *Teamwork is the keyword in making a business go . . . here we see men at work in the Southern States Cooperative plant making those bags "roll off the line". . . this fine action shot was made by Lou Wilson, the ace APFC lens hound!*

EDITORIAL

BY AVERY MEANS

BIG THINGS are astir in Washington concerning the pastures of our nation. The USDA is a-scurry with experts who are getting ready to launch 1951 as a Pasture Year—officially. No one is saying so, and yet no one is denying anything. Like the well fed kitten they smile, purr, nod, and look blank at the appropriate times . . . and outside in the dark sit the farm editors . . . wondering.

* * * *

Korea and certain incidents involving fertilizer manufacturers who do business with that area is just one more example of the increasing international economic, social and political "development" of the American agricultural picture. This "world-focus" view has become necessary in the past two decades because every farm products supplier, especially fertilizer companies and allied farm chemical manufacturers, is a part of the global relationship of agricultural products. The plant food producer who is going to stay in business and prosper must know more than the raw materials situation within his limited territory. AMERICAN FERTILIZER has gradually expanded its coverage of news of the world of interest to our readers. This issue and others to come will tell as much as correspondents can ferret out concerning fertilizer facts from far away.

If you have questions about foreign developments drop a line to the editor, and every effort will be made to give you a complete and satisfactory answer.

* * * *

COMMENTS HAVE been varied in recent mails about the gradual inclusion of more pesticide news in the magazine. On the whole the readers have liked it. Most plant food manufacturers realize it is the "coming" phase of our industry, and should be included in our news coverage. Publisher Sam Veitch's Editorial in the August 5 issue stressed this point, and those who have written in agree with his statement that, "The formulating of pesticides to meet specific needs of your customers, using these powerful ingredients that our scientists have developed, present a real opportunity for steadily increasing business."

* * * *

The report in this issue of the 1949 visit to the U. S. A. by a British Fertilizer "team" is not yet available for general distribution, but Mr. Lee W. Schooler, Office of Information, Economic Cooperation Administration, informs us that copies will be ready for general distribution within the next month. It is a fine opportunity for American fertilizer manufacturers to "see ourselves as others see us!"

HOW ARE WE DOING?

How many times have American fertilizer men and those in the allied farm chemicals field asked this question.

Now you have an answer from the British who came to see our industry last fall and have just released their report on the visit.

Details for securing copies of this report are given in the Editorial on page 5. The following article is taken from the section of the report entitled, "Summary and Recommendations."

British REPORT on

WE SUBMIT OUR REPORT *on the tour of a section of the United States Fertilizer Industry which we undertook in November and December, 1949, as members of the Fertilizer Productivity Team sponsored by the Anglo-American Council on Productivity.*

The Report has been compiled solely by members of the Team and we are unanimous in our opinions. Every effort has been made to give a clear and frank account of what we have seen and learned. . . .

As will appear from the Report the fertilizer industry in the United States has developed on somewhat different lines from that in Great Britain, and, just as we have learned a great deal from visiting their works, so we believe that we have much in this country that would greatly interest our American counterparts. If, therefore, as is our earnest wish, the American industry sends a group of their members to this country, we hope that the British industry will welcome and entertain them with the same willing spirit and generosity as marked our tour in the United States.

If, as a result of our tour a free interchange of ideas and technical information should continue between ourselves and our American friends our work, on that score alone, will not have been in vain.

THE FERTILIZER PRODUCTIVITY TEAM

* * * *

IT BECAME evident during the tour that the American fertilizer industry had progressed along somewhat different lines from those taken at home, in the improved powder production was the main feature of American technique whereas in Great Britain granulation methods have gained the ascendency.

Because of the vast difference in standards of living, wages and currency values the measurement of productivity had to be restricted to comparative man-power utilization.

The industry in America has many natural advantages, notably that it does not depend on imports for any of its raw materials, and that unlimited land has always been available cheaply for expansion in keeping with the "straight line" single block design in buildings.

The industry is chiefly located in the Eastern and South-Eastern States, but is slowly developing in the middle West and far West areas where use of fertilizers is on the increase. There is a tendency for the development of larger manufacturing units nearer the phosphate mining areas and for the smaller units remote from the phosphate deposits to restrict their manufacture to dry mixing operations, while the larger ones concentrate on acid and superphosphate manufacture.

Government action in instituting measures to restore soil fertility in areas where bad farming practice has resulted in poor crop yields indicates the importance with which the development of the fertilizer industry is regarded. The Tennessee Valley Authority under Government auspices is developing many new fertilizer materials on a commercial scale and assistance is being given to farmers where serious soil erosion has occurred.

Government recognition has been responsible in collaboration with the industry for the establishment in every State of agricultural research stations. To educate the farmer in the correct and adequate use of fertilizers, to improve crop yields and soil fertility, Advisory Services on a large scale have also been established.

Because of the vast size of the country freight charges naturally play a very big part in the economy of the fertilizer industry. Great attention has therefore been given to the increase in plant food content of fertilizers and not unnaturally the development of concentrated types of fertilizer has progressed much faster than in the United Kingdom.

This is further illustrated by the wide use in compound manufacture of concentrated nitrogen liquors, compounds such as cyanamide and ammonium nitrate, and others, some of which cannot be applied in Britain as they would cause the reversion of water soluble phosphates.

THE ACTIVITIES of the Federal Government departments in collecting, collating and distributing information on manufacturing techniques and manpower utilization provide a valuable service to the industry in keeping manufacturers up to date with progress being made. The close co-operation of the industry in supplying the information indicates the extent to which this service is welcomed.

Two trade associations are sup-

on U. S. Fertilizer

ported by the industry and their activities are primarily concentrated on propaganda and publicity which is of a very high standard, and secondly on very close liaison with Government departments ensuring satisfactory legislation for the protection of both manufacturers and the farming fraternity. Because the anti-trust laws prohibit any discussion between manufacturers on costs or selling prices this feature of association work is excluded from American practice.

During the war years for reasons of production and economy the number of different grades of fertilizers was considerably reduced. Recently, however, the relaxation of war-time pressure and a return of the buyers' market has encouraged a strong tendency for the number to increase again, and this is likely to be further stimulated by the development of new type nitrogenous fertilizers which are becoming popular because of their slower acting properties. Such materials as Urea-form being less soluble provide nitrogen for plant growth over a long period. The intensive research into soil deficiencies has also revealed the need for a number of secondary plant foods and trace elements, which has given rise to a demand for special mixtures containing these materials in certain areas. Some of these are specified under State guarantee.

Other new developments in fertilization technique in recent years are the use of anhydrous ammonia for direct injection into the soil, mostly on pasture land, the introduction of nitrogenous liquors into irrigation water and the production of freshly mixed fertilizer of granular and large crystalline raw materials for spreading directly on the land by vehicles filled at the factory.

The Team had the opportunity of visiting the phosphate mines in Florida which proved extremely interesting. As there are no phosphate deposits in the United Kingdom the equipment used has no application here, but the high speed facilities at the port terminals, and the loading of ships at rates exceeding 1,000 tons an hour, give some indication of the development of handling equipment which can be achieved. The continuous sampler in operation at these loading terminals provides a valuable method of obtaining reliable samples and a simple adaptation might well prove of value for sampling granular materials.

THE FACTORY lay-out in those places visited was superior in design to all but the most modern of British works. In most cases straight line single block buildings were provided with excellent rail facilities which permitted a simple flow from raw materials to finished product. In many cases the floors were sunk below ground level, so reducing the need for high building and extensive elevator and conveying systems. The economies of this type of building may, however, be outweighed in Britain by the difficulties of site conditions in most areas.

The wide use of mobile handling equipment facilitated production at much higher rates than are common in British practice, and the impression gained was that their use gave considerable economy both financially and in man-power.

Nothing new was seen in the way of conveying or elevating equipment, though the wide use of shuttle conveyors, eliminating ploughs and throw offs was worth noting where sticky material was being handled.

Sulphuric acid was produced mainly from sulphur with its obvious advantages and the tendency was for development of contact plants in preference to the chamber process on large installations. The centralization of controls and the wide use of recorders, resulting in economy of manpower, was a feature of American practice.

The surprisingly small number of continuous superphosphate dens in use was significant. Larger producers appeared to favour the simplest possible den of the concrete silo type with rapid excavation using overhead grabbing cranes.

The advantage of the available phosphoric acid standard operating in the United States was clearly seen in the lower acidulation of phosphate which was achieved in the manufacture of superphosphate, giving a much drier and more friable product than is obtainable in this country and still having the same plant food value. The very fine phosphate grinding which is practised in the States (usually finer than in Britain) with the wide use of air swept Raymond Mills also contributed to the high quality of the superphosphate.

The manufacture of powder compounds is carried out in the States with similar equipment to that used at home except that the addition of nitrogen is effected to a great extent by direct ammoniation in the mixing drum with nitrogen liquors of up to 45 per cent of total nitrogen. This method ensures a rapid setting compound which conditions in 2–4 weeks as compared with 3–4 months in British practice. This is not applicable in Britain since it causes reversion of water soluble phosphate. Again the advantage of the A. P. A. standard is clearly illustrated.

LITTLE attention was given to the control of effluents and it was common to find considerable discharge of gases and dust freely into the atmosphere without much treatment. It was understood, however, that legislation somewhat similar to the British Alkali Act was

expected soon to curtail these practices.

Whereas granulation of compounds in the United States was practised to a far smaller extent than at home, several companies were granulating superphosphate. The relatively poor storing quality of superphosphate as compared with powdered compounds in the United States was no doubt the incentive for this development.

Triple superphosphate (which as already pointed out was being made on a considerable scale) was mainly manufactured by the "wet" phosphoric acid process, although it was understood that one or more plants using the furnace process were being erected in the West. An interesting variation of the wet process carried out by one company dispensed with the phosphoric acid concentration process, weak phosphoric acid being used to slurrify the ground phosphate rock and the slurring being concentrated in a hot air dryer.

Control of analysis appeared to be generally on a rather lower scale than in British procedure. In many cases occasional samples were sent to public analysts or centralised laboratories, few of the smaller factories were suitably equipped to deal with their own. On the other hand, results of analysis showed a high standard of operating efficiency in the works, which we believe is largely attributable to the close watch kept on materials, usage and wastage.

As already pointed out manual handling of bulk materials from stock pile to mixing and packing machinery has been almost entirely eliminated, and the following mechanical equipment is worthy of mention. The Hough Payloader, with very small turning radius proved an excellent machine for general use, and larger machines of the same make were used for heavier duty often in conjunction with small dumper cars. In one or two cases heavy duty excavators on caterpillar tracks were used for reclaiming from stock heaps. For loading bulk into box rail cars or for spreading bulk materials to

(*Continued on page 30*)

RECOMMENDATIONS . . .

17 Points made by Overseas Visitors

On the basis of the Team's observations the following recommendations are made in the hope that increased productivity will result:

General

1. Free exchange of all information designed to increase productivity within our own industry in the United Kingdom should be continued and expanded.
2. Information on fertilizer production, consumption and manpower utilization should be collected, collated and distributed for the benefit of the industry.
3. The Fertilizer Manufacturers' Association might include in its activities the issue of propaganda and publicity to encourage the correct and wider use of fertilizer.
4. A survey of soil fertility could usefully be undertaken on a national scale.
5. In the interests of production and economy manufacturers should continue to restrict to the minimum the number of different mixtures produced.
6. The possibility of bulk distribution and spreading of granular fertilizer in one operation merits investigation.
7. Strong recommendations should be made to the appropriate authorities to adopt the available phosphoric acid standard in preference to the water soluble standard as soon as possible.
8. As a long term policy the Railway Authorities might investigate the increased provision of bottom discharge wagons in view of the rapidly increasing quantities of bulk material being transported by rail.

Manufacturing

9. In construction or reconstruction of acid plants, consideration should be given to the centralization of controls whereby economy in manpower could be effected.
10. The study of simple mechanical devices for the rapid discharge of bulk material from rail wagons (e.g., drag line scrapers) might pay dividends despite the small size of British rolling stock.
11. Increased use of suitable mobile mechanical handling equipment should be made as soon as practicable to reduce human effort and manual handling.
12. Manufacturers might consider giving greater consideration to reward in hourly rates for skilled process operations in preference to piece work or bonus rates (except on purely repetitive work) to elevate the status of the skilled worker and to encourage individual ambition.
13. All workers should be encouraged to take an interest in their factory production.
14. Practical safety measures taken in works should be supplemented by propaganda to make operatives more safety conscious.
15. Good washing and changing facilities are desirable for the maintenance of morale.
16. The practicability of some automatic machine system to provide refreshments should be considered to reduce time lost in meal breaks.
17. Companies could usefully give more attention to the simplification of reporting procedure and the wider use of modern mechanised office equipment.

- A
- FERTILIZER
- FUTURE
- FEATURE

The Fertilizer Industry and Grassland Farming

WAR OR NO WAR next year will be Pasture Year! That's the word from Washington, and if present plans go through the USDA will put all of its resources behind the movement. This national effort spearheaded by official Washington will make the grassland movement the biggest thing to hit the agricultural spotlight since farm mechanization, the shift to hybrid corn, or the nation-wide awakening to the need for soil conservation.

Changes in America's agricultural picture do not come about overnight. Things move with agonizing slowness at first . . . growth of interest is gradual . . . often imperceptible . . . then suddenly the idea "breaks" and everyone is talking, promoting and actually "doing" the new and forsaking the old.

Somewhere behind the scenes in Washington the word has been passed and the busy bee-hive of the USDA is alive with grassland talk.

Fertilizer manufacturers and allied farm chemicals companies have a major interest in this fast-breaking development in a movement which has inched forward for almost ten years.

The work of NFA's Plant Food Research Committee, which pioneered in pasture fertilization work, is now bearing fruit. Farflung research and educational work are having their effect. At present at least 26 States have Statewide or local county pasture programs—a good indication of the interest in the grassland movement.

Sound basic reasons are behind this grassland movement which is capturing the interest of farmers. First, America has an expanding population which requires the production of greater and greater amounts of quality meat and livestock products. Second, grassland farming is easily integrated with soil conservation practices and current crop measures.

Leaders recognize that the key to profitable grassland farming is the judicious use of fertilizers. But more fertilizers must be used if the full value of such farming is to be realized. Although the total acreage devoted to grass is more than double that of all other crops, on this large acreage there are used only about 2 million of the more than 16 million tons of fertilizer currently consumed. The application of more and more fertilizer on our sod crops is urgently required.

INTERESTING figures on the fertilizer potentials in grassland farming have been developed as a result of a study which included consultations with authorities in the various areas. Two factors were given particular attention: (1) The increased use of fertilizer on pastures all over the country, even in old pasture areas. (2) The growth in fertilizer use in areas where pastures are tending to replace and supplement fertilized row crops. The figures for possible expansion in pasture acreage are presented in Table 1.

In Table 2 an attempt has been made to present the average fertilizer recommendations for pastures in the various regions—these are, of course, rough averages.

A third step is now taken. By combining the data on increase in pasture acreage with those on fertilizer recommendations for pasture, it is possible to obtain an estimate of the increase in fertilizer needs for the new grassland program. This has been summarized in Table 3.

In making the estimates in Table 3 it is assumed that many pastures will be established in areas that are at present wasteland, particularly in the South; and that where pastures replace cultivated crops, now fertilized, this change will not cause a decline in fertilizer use on these crops. It is also assumed that a reduction in the acreage of a fertilized cash crop usually means more fertilizer per acre on the reduced acreage. In addition, most row crops are not being fertilized to the extent that the experiment stations recommend. So the increase in fertilizer consumption by pastures should be a net increase and not represent a reduction of fertilizer for other crops. Thus, the figures given deal with new markets for fertilizer in general.

ON THE basis of all these assumptions, it is possible, as a final step, to make a comparison

TABLE 1

POTENTIAL INCREASE IN PASTURE ACREAGE BY REGIONS

Region	States Involved	Potential Increase in Improved Pastures	
		By Percent	By Acres
Northeast	New England States & N. Y., N. J., Pa., & W. Va.	15%	4,000,000
South	N. C., S. C., Ga., Ala., Miss., Tenn., La., Ark., & Va.	50%	40,000,000
Middlewest (Corn Belt)	Ohio, Ind., Ill., Mich., Wis., Minn., Iowa, Mo., & Ky.	20%	14,000,000
Pacific Coast	Wash., Ore., Calif.	25%	1,000,000*

*In the Pacific region, irrigated pastures are being developed.

TABLE 2

GENERAL RECOMMENDATIONS FOR PASTURES

Region	Largely Grass	Average Recommendations		Average Pounds Plant Food Per Acre Per Year
		Seeding Legume Pasture	Maintaining Legume Pasture	
Northeast	40–40–40	80–100–80	0–60–60	150
South	60–40–40	30–120–80	0–40–60	170
Middlewest	60–60–40	10– 70–40	0–30–30	80
Pacific	45–45–30	15– 60–30	20–60–20	100

TABLE 4

APPROXIMATE FERTILIZER POTENTIALS OF GRASSLAND FARMING

Region	Total Plant Food Consumption on All Crops (1947–48)	Additional Plant Food Required Annually for New Pasture
Northeast	540,000 tons	300,000 tons
South	1,600,000 tons	3,500,000 tons
Middlewest	1,000,000 tons	560,000 tons
Pacific	210,000 tons	50,000 tons
Total	3,350,000 tons*	4,410,000 tons

*Total for entire U. S. in 1947–48 was 3,550,000 tons.

between the plant food consumed in the year of 1947–48 and the potentials for grassland farming in the humid regions. These data are given in Table 4.

From this study, it is clear that to fertilize properly only the new acreage in pasture would require more fertilizer than was used on all crops in the United States in the year 1947–48. There can be no doubt, any way you look at it, that the fertilizer industry has a big responsibility and a big stake in the future of grassland farming.

TABLE 3

INCREASE IN FERTILIZER NEEDS FOR NEW GRASSLAND PROGRAM

Region	Additional Plant Food Required for New Pastures
Northeast	300,000 tons
South	3,500,000 tons
Middlewest	560,000 tons
Pacific Coast	50,000 tons*

*Assuming fertilization of the newer irrigated pastures.

THEY SAY—

First She—"George's mustache makes me laugh."
Second She—"Tickled me, too."

You don't get stomach ulcers from what you eat. You get them from what is eating you.

The more things a man is ashamed of the more respectable he is.
—Bernard Shaw.

A puritan is a person who pours righteous indignation into the wrong things.
—G. K. Chesterton.

Losing enthusiasm is the first step in losing a job.

A man is rich in proportion to the number of things he can afford to let alone.
—Thoreau.

Selling is the art of PERSUADING people to buy what you have to sell.

A panel discussion on grasslands was conducted by the Pasture Subcommittee of NFA's Plant Food Research Committee at the Committee's June 1950 meeting at White Sulphur Springs, West Va. Those participating were: J. A. Naftel, B. S. Chronister, M. H. McVickar and J. Fielding Reed.

IN THE FUTURE . . .

August 28-30 Thirtieth Annual Convention, American Soybean Association, Springfield, Illinois

September 28 Annual Fertilizer Conference, Rutgers University, New Brunswick, New Jersey

AMERICAN FERTILIZER GOES ON A

NEW ENGLAND PASTURE TOUR

By Avery Means, Associate Editor

THE DESK CLERK at the Biltmore Hotel in Providence, Rhode Island evidently took a very dim view of the entire business, and as the lobby filled with Pasture Tour folks on Sunday night he commented upon the affair.

"What the hell do you do on a Pasture Tour," he asked of no one in particular.

Being the nearest "no one in particular" I decided to draw closer and give him some sort of answer which would satisfy the man-in-the-street or the man-behind-the-desk. It was not easy.

Halfway through the third paragraph of my explanation I stopped. Who can tell a non-interested person what one sees, what one learns, what one realizes, and just what one down-right "enjoys" on a Pasture Tour—any Tour in any part of America.

The New England Pasture Tour, arranged and spear-headed by the Plant Food Research Committee of the National Fertilizer Association was much like other tours I have been on in North Carolina, Virginia, Goergia, South Carolina, Florida, Alabama and Tennessee.

. . . it rained . . . it drizzled . . . it was dusty . . . hot . . . tiresome . . . even dull at times . . . some of the fellows got on on each other's nerves with their one-track minds and their limited and "loaded" questions at every farm stop . . . some were just along for the ride—to be seen because it is good business to be seen on this sort of thing . . . some were not sure why they came—boss's orders you know . . . but the rest of us were on this interesting trek into the Old America of Rhode Island, Connecticut, Massachusetts, Vermont, New Hampshire and Maine because we sincerely wanted to see the progress of grassland farming in the region.

You meet "folks of the land" . . . readers of what you have been writing for the past months.

There is no other opportunity like it.

AS YOU WALK across the green fields, or drive with men from many places down the narrow back roads you get a chance to "sense" the local, "grass-roots," thinking of the soil-workers of our country. You ride, walk, and talk with state agronomists, and hear their problems; you listen to the short sentences and long silences of local farmers; you hear the expert opinions of many county argicultural leaders. Small town bankers talk of money and mortagges. Each man sees in the green pastures a problem, or an answer to a problem. And you ride along and listen to the man-in-the-field who is a world away from the man-behind-the-desk in Providence.

Personnel from the land-grant colleges, the Soil Conservation Service, the Production and Marketing Administration, the Vo-Ag instructors, and ten men from Canada were with the Tour as it wound across New England.

It's too bad the Tour did not end at Providence—where it all began. I could have said much more to that hotel man on Friday than I said on Sunday night.

Here's a brief outline of the Tour, which you may wish to keep for a record:

From Providence the 40-odd cars rolled south on Monday morning into Rhode Island and the first stop at the **Froberg Farm**—Land on this farm is limited. An intensive cropping system is followed, on all of the land, with plenty of fertilizer and good management. The milk cows are kept on one farm; the heifers on another.

Several stops were made at Rhode Island **Experimental Plots**—Stops included: Pasture plots grazed with heifers, land recently cleared for use as pasture and hay, Narragansett alfalfa field, and experimental lawn and golf green plots.

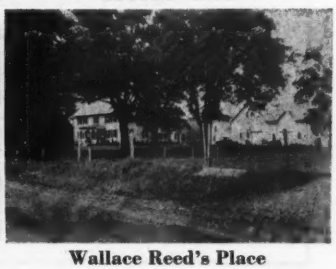
The Tour then turned toward the **Hoyle Farm**—Like other intensively managed dairy farms in the state, which have production on limited acreage, Ladino clover with good fertilization furnishes the basis of the forage crop program. Sudangrass is used for

"Elm Crest"

John Roberts and Son

The Turf Plots at Rhode Island

"Shadow Lawn"



Wallace Reed's Place

Our First Stop—The Froberg Farm in R.I.

quick emergency pasture in midsummer, particularly where Ladino has winterkilled.

The caravan of cars crossed into Connecticut headed for Jewett City and stops were made at three places; first the group toured the **George Merrell Farm**—There were two major enterpises on this farm—dairying and orcharding. As in other cases, Ladino clover was considered the backbone of the pasture program. Judicious use of lime and fertilizer is religously practiced. On this place, Ladino is being used efficiently as a cover in the orchards. The response has been very good.

One of the highlights of the Tour was the visit to the **Storrs Agricultural Experimental Plots**—It was pointed out that Ladino alone did not yield as much, was more difficult to harvest, and was not as well balanced nutritionally as when seeded with one or more grasses. Simple mixtures, such as Ladino and one grass, have proved at least equal in both total and seasonal distribution of growth to more complex ones. Brome- and Orchard-Ladino mixtures have been best. The chief advantage of bomegras is its high palatability; except for the low palatability, orchardgrass is an ideal companion for Ladino. It grows well in both cool and hot weather and maintains better stands under frequent grazing or mowing than other grasses.

Experiments indicate that Ladino has about the same fertility requirements as red clover. The soil should be limed to about *p*H 6.4. The equivalent of 600 pounds of superphosphate and 200 pounds 60 per cent potash per acre are needed at seeding. Annual top dressings with the equivalent of 250 pounds superphosphate and 200 pounds of 60 per cent muriate of potash are needed for good maintenace.

In general, three to five cuttings a season, with the first not later whan June 15 and the last not earlier than September, have given quite satisfactory stands and yields.

The most forage has been harvested from plots where the mowing was done when the crop was 10 inches high and the mower set to cut 2 inches above the ground. The 8- to 2-inch system has been nearly as good. The smallest yields have come from plots under the 8- to 4-inch system with no harvests after September 1. In this case, the omission of fall cuttings permitted the grasses, which grow much better than clovers in coool weather, to smother the Ladino.

John Davis' Farm at Sterling Junction Mass.

A real "agricultural team" was visited next at the **Bahler Brothers Farm**—These two brothers with their two sons operate two farms as a corporation. Dairying and potato growing are the two large enterprises. Good pastures are no recent novelty on these farms. In 1933 they were given first county prize in the State Dairymen's Extension Service Contest; in 1936, second; and in 1937, the grand prize for the State. In 1949 they were given the highest score in Connecticut and were rated high in the All New England Contest. The Holsteins on the Meadowbrook farm, fed on a 1:7.5 grain-milk ratio, averged 12,363 pounds of milk in 1949; the herd on the Lakeview farm, fed on a 1 to 9.6 grain-milk ratio, averaged 10,376 pounds of milk for the same year. One of the fields inspected was cleared in January-March 1949, seeded on scattered spoil from drainage ditches. Two and one-half to three tons of limestone and 750 pounds of 5-15-15 per acre were used at the time 3 pounds of Ladino and 8 pounds of brome were seeded. The field has provided excellent pasture from June to November.

Stanley Clarke's Farm

On Tuesday afternoon the Tour crossed over into Massachusetts and three stops were made in this state. The first was, at the **Holopainen Farm**—This place, originally stony, is now an outstanding grassland farm. Through heavy fertilization, legumes and emergency crops, early harvest, they utilize maximum forage and a minimum of grain. Total cropland figures about 2 acres per animal unit. The amount of fertilizer used in 1949 amounted to 1,800 pounds per animal unit. Milk-grain ratio the past winter ran 1:8; in pasture months about 1:10.

Those who argue about plows ruining land would be interested in the **John Davis & Sons Farm**—This farm consists of 230 acres of improved land. No plows are owned but a bog disk is used instead. Many of the fields have been cleared from brush and heavy stone. The brush is cleared by trampling with crawler tractor when ground is frozen. The herd average in 1949 (86 cows) was over 11,000 pounds milk and 426 pounds

(*Continued on page 34*)

BONE MEAL TANKAGE BLOOD
SHEEP—COW—POULTRY MANURE
CASTOR POMACE NITROGENOUS
GROUND TOBACCO STEMS HOOF MEAL
ALL FERTILIZER MATERIALS
FRANK R. JACKLE
405 Lexington Avenue New York 17, N. Y.

FERTILIZER MATERIALS MARKET

NEW YORK

Little Current Activity in Chemical Materials Outside of Contract Shipments. Organics Market Still Firm but Demand Slackens. Nitrogenous Tankage in Short Supply.

NEW YORK, August 16, 1950

Sulphate of Ammonia

Nothing new was reported in this material with buyers taking delivery against existing contracts. Some export inquiry was noted from time to time.

Nitrate of Soda

No change has taken place in the price of nitrate of soda and stocks are still adequate at most ports.

Ammonium Nitrate

Demand continued good for this material, particularly from the Midwest. No price changes were noted.

Nitrogenous Tankage

It is difficult to locate offerings and some of the larger producers are being forced to allocate their production to old buyers, due to any unexpected heavy demand and shortage of similar organics.

Castor Pomace

This material advanced $2.00 per ton, with sales made at $32.50 per ton, f.o.b. production points. At this time the production is rather uncertain and no offerings are being made. Demand continues excellent.

Organics

Organic fertilizer materials maintained a firm tone, although the buying was not as brisk as a week or so ago. Blood was quoted at $8.50 ($10.33 per unit N), f.o.b. New York, with tankage at a slightly higher figure. Both feed and fertilizer buyers were showing interest at these figures. Some imported cottonseed meal arrived at a price slightly under the domestic market. Soybean meal was quoted at $82.00 per ton in bulk, f.o.b. Decatur, Ill. Linseed meal sold at $69.00 per ton in bulk, f.o.b. eastern shipping points.

Fish Meal

Reports were heard in the trade of a rather poor catch along the Atlantic Coast. Fish meal was nominally quoted at from $135.00 to $140.00 per ton, f.o.b. fish factories, but little material was offered. Several lots of imported material arrived at various ports.

Bone Meal

This material advanced as much as $5.00 per ton recently, due to the better demand from both the feed and fertilizer trade and offerings for nearby shipment are not plentiful.

Hoof Meal

Some material recently sold on the basis of $7.00 per unit of ammonia ($8.51 per unit N), f.o.b. Chicago, Ill., with little material offered and interest continuing good from various buyers.

Superphosphate

No further price changes were noted after the recent reduction in price at Carteret, N. J. Triple superphosphate continues to be in good demand and producers are making deliveries against contracts.

Potash

Producers are afraid of a possible shortage of box cars at production points, but otherwise the situation is unchanged and domestic production continues at a high rate.

Garbage Tankage

Most of the larger producers were sold out for delivery over the balance of the year.

PHILADELPHIA

Seasonal Quiet in Materials Market Prevails. Nitrogen Supply Expected to Be Adequate

PHILADELPHIA, August 16, 1950

The fertilizer materials market is seasonably quiet. There seems to be no general expectation that nitrogen will get too scarce, although it is possible increased munitions manufacture might ultimately change this. Tankage and blood have eased off a little, with bone meal and fish scrap a little firmer. Nitrogen tankage is in exceedingly short supply.

Sulphate of Ammonia

Demand is not too brisk, and while production of coke-oven is well able to supply present requirements, the supply of converter's grade is still tight. No price changes are indicated.

Ammonium Nitrate

Production is well under contract with spot supply tight and rather good demand.

Nitrate of Soda

There is seasonal demand for top dressing and the supply is ample to meet all present requirements. No price changes are noted.

Blood, Tankage, Bone

Blood and tankage are in slightly easier price position at $8.00 per unit ammonia ($9.72 to $10.33 per unit N) in New York, and $8.50 to $9.99 ($10.33 to $10.94 per Unit N) in the Chicago area. Bone meal is rather steady at $60.00 to $62.50 per ton. Hoof meal has been quoted as high as $8.00 per unit of ammonia ($9.72 per Unit N), Chicago, but not much buying interest.

Castor Pomace

Price has been advanced to $32.50 per ton, with supply limited.

Fish Scrap

Price is more or less nominal at $135.00 per ton for menhaden meal and $127.50 for scrap. Demand is not at all brisk.

Phosphate Rock

Situation is quiet, with only seasonal demand and supplies are ample to meet all present requirements. Deliveries are mostly against contracts.

Superphosphate

While the market is steady, there is only normal summer demand. Stocks are sufficient to supply present inquiries and no new price changes are reported.

Potash

Steady movement continues against contracts, and producing plants are operating at full capacity. Foreign offerings are not receiving much attention here.

CHARLESTON

Material Supplies Adequate for Coming Season. Organics Market Continues Firm with Some Shortages

CHARLESTON, August 14, 1950

No serious shortages of the prime ingredients—nitrogen, superphosphate, and potash—are apparent for the new season, and supply and demand are fairly well in balance. Fertilizer manufacturers continue to contract for their expected needs of these three items.

Organics

The market on organics continues firm to stronger, as the feed trade is increasing demand for feed grade ammoniates. The producers of domestic nitrogenous continue in a heavily sold position and prices are nominally $4.00 to $4.35 per unit of ammonia ($4.86 to $5.29 per Unit N) in bulk, f.o.b. production point. Blood and tankage are now at levels too high for most fertilizer buyers. Imported organics are offered in limited quantities.

Castor Pomace

The prime producers of domestic castor pomace are sold up through September. It is expected the new price for additional tonnage will be $32.50 per ton in bags, f.o.b. Northeastern production point.

Dried Ground Blood

Chicago market is around $9.00 per unit of ammonia ($10.94 per unit N), in bulk with the New York market nominal at about the same level.

Potash

Shipments of domestic material are moving steadily to customers. Production is at capacity levels. The French allocation is reported sold. Little interest is shown in Russian material. The market is firm to tight.

Ground Cotton Bur Ash

The price of 30/40 per cent K_2O material is nominally at 65 cents per unit of K_2O in bulk, f.o.b. Texas production point, but the major producers are withdrawn from the market temporarily. Supplies for the new season are expected to be considerably curtailed.

Phosphate Rock

Movement is seasonal in dimensions. The market continues firm with some small export movement noted.

Superphosphate

Producers in several sections of the country are in a comfortably sold position, having contracted heavily for the new season.

Sulphate of Ammonia

Prompt shipment supplies are in tight position. Producers of synthetic material are also comfortably sold several months ahead.

Ammonium Nitrate

Demand continues steady and supplies for immediate and prompt shipment are tight. Prices remain unchanged.

Nitrate of Soda

Stocks are plentiful and demand seasonal, mostly for top dressing. Prices continue unchanged.

CHICAGO

Organics Market Declines Sharply. Buyers Waiting for Further Price Drops

CHICAGO, August 14, 1950

The market on animal ammoniates declined sharply during the past week and because of the weakened condition there is practically no buying interest at this time, indicating that further declines may be anticipated before the reversal of the market situation is checked. As a result of this development, all prices currently quoted are strictly nominal and in all probability any reasonable bids would be accepted.

Ground and sacked meat scraps testing 55 per cent protein are currently listed at $128 per ton and digester tankage in bags testing 60 per cent protein is quoted at $120 per ton. Dried rendered tankage is quoted nominally at $2.00 to $2.10 per unit of protein. Wet rendered tankage is nominal at $9.00 per unit of ammonia ($10.94 per unit N) and dried blood at $8.00 per unit ($9.72 per unit N). Steamed bone meal 65 per cent B.P.L. is $70 to $75 per ton and raw bone meal, 4½ and 45 per cent, $60 to $65 per ton.

PESTICIDES MARKET

BENNIE HEX (BHC) AND DDT are still in very short supply because of the shortage of chlorine. Production problems will not ease. Cryolite stocks are ample. Interest is up in calcium arsenate. Copper sulphate very tight and the squeeze also applies to stocks of zinc sulphate, powered grades. Aldrin prices rising, production costs up.

[This report is accurate up to the week ending August 12.]

Aldrin

Increases now in effect to cover manufacturing expenses. Quotes on 100 per cent basis $1.92 lb. for drums and $1.72 for truckloads. 60 per cent equivalent solution (carlots) now runs $1.06 lb. and $1.20 for small drumlots (works, freight, allowed to destination).

"Bennie Hex" (BHC)

Shortages of benzol and chlorine hampering all production. May output—5,382,736 lbs. (April—4,550,390) Gamma isomer content—728,340 lbs. in May (April—627,153).

Calcium Arsenate

Interest on the rise in Texas, Mississippi, Alabama, Arkansas, Missouri. May 2,449 tons. April 1,424 and May 757 (1949). Total (1949) 16,006,000 against 27,234,000 in 1948.

EDITOR'S NOTE: This is another of the new type articles we are printing. Articles to help the fertilizer salesman talk to his customer. Carry a copy of AMERICAN FERTILIZER in your car—and use it in your sales talk on pesticides.

2,4-D

End of season with odd lots moving from producers and movement slow to dealers. Kansas is using for corn and some interest in brush control. No shortage of stocks this season. Adequate supply from April thru July. May production—1,457,901 (April—1,480,850).

DDT

Situation here, as with BHC, tight until chlorine problem is settled. Producers and suppliers report expected strong market for rest of year. May production—6,673,392 lbs. (April—6,151,798).

Lead Arsenate

Small April exports (5,000 lbs.) mostly to Uruguay. Only large shipment this year was to Brazil (257,000 lbs. in January)

Nicotine Sulphate

Half of the 26,000 lbs. shipped in April went to Canada. March totaled 10,000 lbs.

Pyrethrum

April imports 1,034,000 lbs. This was a 36 per cent drop compared with 1,622,000 in March. Extract exports for April hit 48,000 lbs. for a record in recent months. This total was over three times the first quarter total (14,000) for 1950. April shipping went to Saudi Arabia, Italy and Paraguay.

Rotenone Supplies

April shipments from Peru—1,175,000 lbs. March imports—1,121,000 lbs.

Sodium Arsenite

Stock of dry material exhausted. New production starts in the late fall or early winter.

If you have agricultural research problems in the field of fertilizer-insecticide mixtures address your questions to The Editor. Letters answered promptly.

High temperatures and the rush of summer farm work makes it easy to be overcome by several forms of heat illness.

Sunstroke follows prolonged exposure to the sun; heatstroke is from excessive heat with or without exposure to the sun. The effects are the same and either may be fatal.

The symptoms are hot and dry skin, face red and flushed, breathing hard and loud, pupils enlarged and unconsciousness may follow in severe cases.

Prevention is the best cure, but you should be prepared if it does strike. Here is what the National Safety Council suggests for sunstroke or heatstroke:

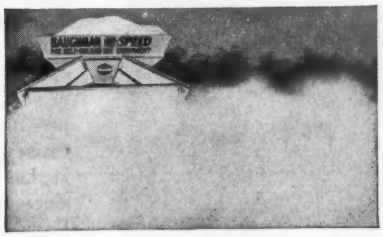
1. **Move to a cool shady place, strip to the underclothes, lay on back with head and shoulders raised.**
2. **Apply ice or cold wet cloths to head, cool the body gradually with a cool bath or with a hose or wet the clothes and rub limbs toward the heart.**
3. **After treating for several minutes, stop and observe patient. If skin becomes hot again, resume treatment.**
4. **If conscious, give cool drinks, not ice cold. Do not give stimulants.**
5. **Get the patient to a doctor or a hospital as soon as possible. Continue the treatment in the ambulance.**

With heat exhaustion, the patient's skin is cold and clammy. A simple rule may serve as a guide and avoid treatment confusion. Briefly, it is this: IF THE PATIENT IS COLD, MAKE HIM WARM. IF HE IS HOT, MAKE HIM COOL.

Baughman

Holds the spread to the ground!

Baughman's new principle (above) contrasts sharply with the ordinary method (right). The direction control of the Model 235 Attachment assures minimum waste in spreading expensive fertilizers.



MODEL 23F FERTILIZER SPRAYER ATTACHMENT MAKES IT LAY AND STICK

For Baughman K, K-2 and K-3 Bodies. Prevents wind from scattering lime and phosphate spreads. Confines air blast from whirling distributor and directs spreading materials outward and groundward. Causes the spread to LAY and STICK. Spreads limestone up to 30 feet . . . phosphate and other fertilizers up to 20 feet.

Folds to 8 feet easily and solidly for highway travel. Open (to 18 feet) and ready for work in a jiffy. Ruggedly built of 13 gauge alloy steel . . . heavy reinforced hinges. No moving parts . . . all parts replaceable. Heavy combination canvas and rubber curtain. Nothing like it on the market . . . *WRITE FOR FULL INFORMATION.*

CUT COSTS . . . INCREASE PROFITS with BAUGHMAN Customized EQUIPMENT

MODEL Q SCREW CONVEYOR loads and unloads from the horizontal to 50°. Capacity up to 40 bu. per minute. Big 9" conveyor screw handles any dry, powdered or granular materials. Available with or without wheels—hundreds of applications.

BELT and BUCKET ELEVATOR . . . stores in bulk . . . delivers in bulk . . . eliminates bagging. The most efficient way to handle commercial fertilizers. **LOW COST** because it's assembled from standard size sections, eliminating the cost of a custom-built installation.

WRITE FOR COMPLETE DETAILS
of Baughman fertilizer handling and spreading equipment

BAUGHMAN

BAUGHMAN MANUFACTURING CO., Inc.
282 SHIPMAN ROAD, JERSEYVILLE, ILLINOIS
"The Pioneers of the Fertilizer Spreading Industry"

Notes From The Field . . .

STERLING, LA.—Mr. Woods, President of Commerical Solv Corporation toured the company's plant prior to the decisio build a million-dollar Nitrogen Solutions plant at this locat (Left to right) J. Albert Woods, Pres., M. C. Wheeler, Vice Pre charge of Production, A. K. Hamilton, Vice Pres. and J. Wheeler, Plant Manager

Hunter New Sales Manager

Malcolm E. Hunter has been appointed Sales Manager of Direct Application Nitrogen Materials of The Barrett Division, Allied Chemical & Dye Corporation. Mr.

Hunter is a native of South Carolina and is well-known in the fertilizer industry. He recently resigned as General Sales Manager of the Fertilizer Division of Virginia-Carolina Chemical Corporation, after serving in the Sales Department of that Corporation for 28 years. In his new connection, Mr. Hunter is in charge of sales of nitrate of soda, "A-N-L", and other nitrogen fertilizer materials distributed by Barret for direct application.

Hansen in New Job

Ralph E. Hansen, former associate editor of Dakota Farmer at Aberdeen, S. D., has left that publication recently. Mr. Hansen is now with Consumers Cooperative, Kansas City, Mo.

Army Ammonia Plant Leased

The Army synthetic ammonia plant at San Jacinto, Tex., was leased last week to R. S. Mueller & Co., Baltimore, as a result of bids opened last April. The plant is the newest of the Army's ammonia production facilities and had a capacity of 25,000 tons annually. It has been operated under lease since its construction by Hercules Powder Company, Wilmington.

McCormick Takes Oath

Clarence J. McCormick of Indiana is now Under Secretary of Agriculture. He was sworn into office on July 28 in the office of Secretary Brannan.

Brazilian Farms

It is estimated that the Brazil, which used only 200,000 tons of mineral and chemical fertilizers last year, needs 5,000,000 tons a year to meet full requirements for good agricultural production.

Agricultural experts figure that for phosphate fertilizers to be economically worthwhile for most Brazilian farmers, they must sell for no more than about a cent a pound. Most imported fertilizers now cost 3 cents a pound.

Every business should have a distinctive character, a unique personality. If there exists no such distinguishing mark about your business strive to create one. Aping the methods of other successful companies is never very effective.

Florida Swift Grant

The University of Florida Agricultural Experiment Stations have received a grant of $15,000 from Swift & Co. for fundamental research at the Citrus Experiment Station at Lake Alfred, according to an announcement by Director Willard M. Fifield.

The grant was accepted by the Experiment Stations with the approval of the State Board of Control to help finance research on the effects of phosphates when formed into compounds with magnesium, manganese, zinc, and other elements in the soil. A major objective of the research will be to find compounds that will not leach readily.

Mr. Fifield explained that results of the research may prove applicable to similar soils types in other states.

"The University of Florida Agricultural Experiment Stations are grateful to Swift & Co. for this grant," the director said. "It will enable us to make much more rapid progress than otherwise would have been possible in the field of soil research for citrus."

* * *

The Florida grant is one of 3 awarded by Swift & Co. recently to research institutions in this country and Canada. Swift has awarded over $2,000,000 for basic research during the past decade and this grant is the second awarded to the Florida station within the past two years.

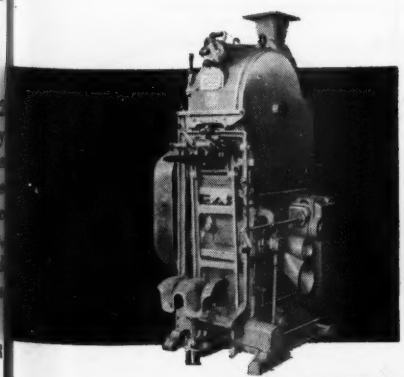
IS THIS "BOTTLE-NECK" CHOKING YOUR PROFITS?

Bag packing speeds in many fertilizer plants have been stepped up as much as 50% with a big saving in labor costs besides. How? Through the installation of St. Regis Valve Bag Packaging Systems, and the use of strong, tough, economical St. Regis Multiwall Paper Bags.

The 1950 fall farm demand for fertilizer will soon be here! Don't delay in putting your plant in shape to handle bigger output per man hour. Make the most of your opportunities for increased tonnage and higher profits. Break the bottle-neck of slow packing speeds!

Write or call your nearest St. Regis Sales Office today, so that our representative can make a prompt engineering survey of your plant, and submit recommendations for the installation of proper St. Regis Multiwall equipment.

St. Regis Multiwall Paper Bags, packed by efficient Valve Bag Packing Machines like this, make a big hit with dealers and their farm customers. They are strong, clean-handling, easy stacking bags—tough, resistant to moisture!



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YOU BUY PROTECTION WHEN YOU BUY MULTIWALLS

Studies Underway on Grass-Fertilizers

What's the cheapest way to get grass growing on brush logged-off land?

Newell D. Dickson, grazing specialist at Washington State College's Experiment Station at Puyallup, intends to find that out.

Dickson will use a bulldozer, a wheel tractor, fire, chemicals and slashing—on various plots, singly and in combination. Cattle will be grazed on each plot and records kept of the meat produced per day on each plot. Changes in the vegetative cover will also be recorded. To find which method was cheapest, Dickson will compare the cost of preparing each plot to the returns received from each.

To find out what varieties of forages work the best, agronomists Karl Baur, F. T. Tremblay and Maynard S. Gruder will work with Dickson. They will use alfalfa with varied amounts of lime banded under the seed, hay and pasture mixtures with different rates and ratios of commercial fertilizer, and flat peas for hay production.

Dickson will also study winter pastures—long a problem with beef and dairy men. He thinks the grazing period can be stretched by proper management and using the right fertilizers on some of the forage crops that grow during the winter.

The forages are being planted on a 20-acre plot and will be ready to graze by the fall of 1951. Creeping red fescue, subterranean, white and red clovers, and a special strain of orchard grass are being used. Winter wheats and oats and abruzzi rye will be grown on a portion of the pastures.

Edison was introduced at a dinner by the M.C., who mentioned his many inventions and dwelt at length on his inventing the talking machine. The aged inventor rose and smiling gently, said:

"Thanks, but there's a small correction. God invented the talking machine, I invented the first that could be shut off."

A low neckline is something you can approve of and look down on at at the same time.

Here's to the Bachelor
So lovely and gay,
For it's not his fault
He was born that way.

And here's to the spinster
So lovely and good
For it's not her fault
She's done what she could.

Fred Allen says that television is the kind of radio that lets the people at home see what the people in the studio are not laughing at.

V-C

V-C fertilizers
Complete Fertilizers Superphosphate
Concentrated Superphosphate
Phospho Plaster Sulphuric Acid

V-C phosphate rock products
Phosphate Rock, Ground and Unground
Calcined Phosphate Rock Nodulized Phosphatic Materials

V-C cleansers
The Vicar® Line of Cleansers

V-C fibers
Vicara® Textile Fibers
Zycon Fibers

V-C bags
Burlap Bags Cotton Bags
Paper Bags

V-C chemicals
Phosphorus
Phosphoric Acids
Technical Grade
85% N. F. Grade
75% Food Grade
62½% Commercial Grade
Sodium Phosphates
Disodium Phosphate
(Technical and Drug Grades)
Trisodium Phosphate
Tetrasodium Pyrophosphate
Sodium Tripolyphosphate
Calcium Phosphates
Monocalcium Phosphate
Lucky Leaven® Phosphate
Phosphate Paste

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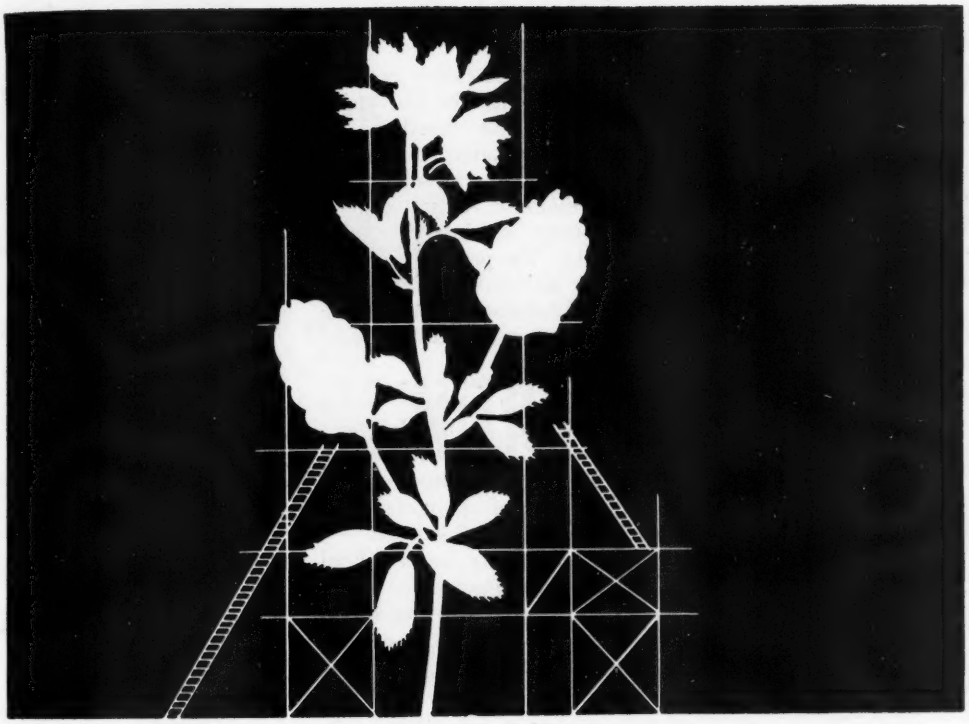

AMMONIA NITROGEN builds COVER CROPS

Grasses, clovers, and legumes—whatever the cover crop—ammonia nitrogen means rapid, early growth. By building vigorous cover, it helps hold the land down to earth, fights erosion, and cuts down the annual harvest of dust bowls.

High-nitrogen fertilizer, applied to cover crops, is an important part of the soil conservation program.

CSC produces anhydrous ammonia, the most concentrated and economical source of nitrogen, at its Sterlington, Louisiana, plant. The major part of this production is going to Gulf Coast manufacturers for conversion to high-nitrogen fertilizers.

PRODUCTS OF THE AGRICULTURAL DIVISION
Anhydrous Ammonia • Benzene Hexachloride • Choline Chloride • Condensed Distillers' Molasses Solubles • Dilan • Ethyl Formate • Metaldehyde • Niacin • Butyl Fermentation Solubles and Riboflavin Feed Ingredients

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COMMERCIAL SOLVENTS CORPORATION

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Texas Meeting

Texas, Louisiana, Arkansas, New Mexico and Oklahoma pasture and fertilizer experts met at Galveston on July 20. The primary concern of this meeting was to discuss possible developments in pastures for this area. The Governor of Texas has declared a decade of pasture development from 1950 to 1960.

Among others appearing on the program, W. R. Thompson, the nationally famous "Pasture Man," spoke on the importance of pastures in our economy.

Mississippi Meeting

The National Cotton Council held its fourth annual cotton mechanization conference at Greenville, Mississippi, July 13, 14 and 15. Farmers, machinery manufacturers, fertilizer producers and others interested in agriculture were present to see and discuss recent developments in the mechanical production of cotton. A practical demonstration of modern equipment now used was demonstrated at the Delta Branch Experiment Station, Stoneville.

A panel discussed the fertilizer industry's stake in the future of cotton.

Georgia Meeting

The Georgia Extension Service, in cooperation with the University System, held four meetings for fertilizer manufacturers and dealers, as follows: July 20, Coffee County; July 21, Sumter County; July 25, Jasper County; and July 26, Cherokee County. The program for each conference included visiting farms where good fertilizer practices were employed and round-table discussions.

In Coffee County the group visited farms of J. B. Hall and Grady Futch. Excellent pasture and corn crops were inspected and the importance of adequate plant food was vividly demonstrated.

In Sumter County farms of Fred Statham, Jimmy Reeves and W. L. Popwell were toured by the group.

E. B. Alexander, extension agronomist, was in charge of the series of meetings.

Alabama Meeting

Some 150 members of the industry met at Auburn on July 27 and 28. Representatives of the State Experiment Station presented the latest information on developments in fertilizer research in Alabama. The experimental plots were visited both at Auburn and at the outlying fields.

J. C. Lowery, extension agronomist, said Alabama should use 4 million tons of fertilizer annually instead of the approximately 1 million tons now used. Mr. Lowery stated that pastures alone in Alabama should receive about 2½ million tons of fertilizer.

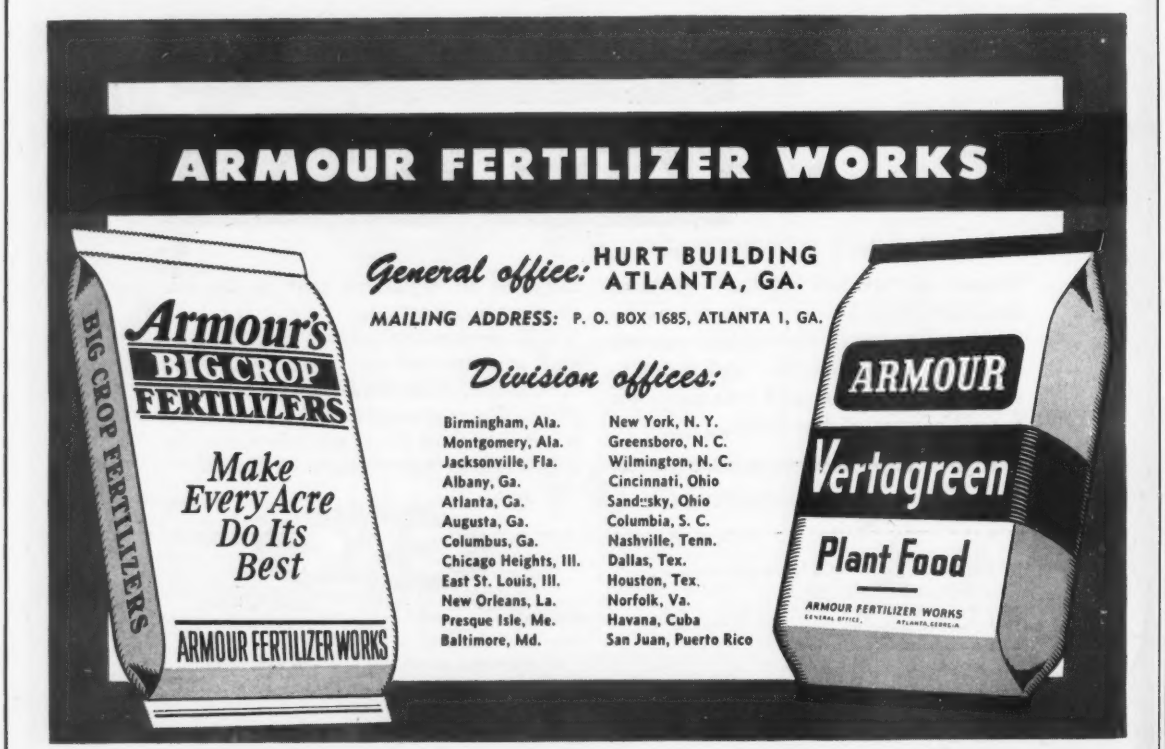
At the annual banquet President Draughon discussed programs facing agriculture.

An adult is a person who has stopped growing at both ends and started growing in the middle.

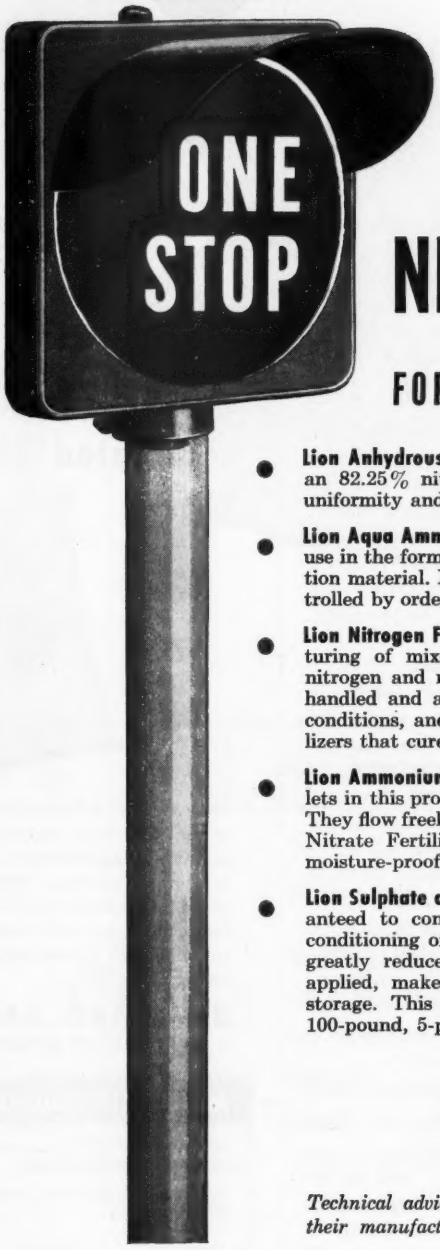
Mrs. Henpecked—"I suppose you've been to see a sick friend—holding his hand all evening."

Mr. Henpeck (sadly): "If I'd been holding his hand, I'd have made some money."

The trouble with women's slacks is that they're not slack enough.



IT'S LION FOR



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- **Lion Aqua Ammonia** . . . This product is available to manufacturers for use in the formulation of mixed fertilizers or for sale as direct application material. Normally about 30% ammonia, its content can be controlled by order to suit your needs.
- **Lion Nitrogen Fertilizer Solutions** . . . Made specifically for the manufacturing of mixed fertilizers, these products supply both ammonia nitrogen and nitrate nitrogen in the ratios desired. They are easily handled and available in three types designed for varying weather conditions, and for formula requirements in the production of fertilizers that cure rapidly, store well and drill evenly.
- **Lion Ammonium Nitrate Fertilizer** . . . The improved spherical white pellets in this product contain a guaranteed minimum of 33.5% nitrogen. They flow freely, resist caking and store much better. Lion Ammonium Nitrate Fertilizer is shipped in 100-pound, 6-ply bags with two moisture-proof asphalt layers.
- **Lion Sulphate of Ammonia** . . . This new, superior-type sulphate is guaranteed to contain a minimum of 21% nitrogen. Through special conditioning of the larger crystals, moisture and free acid content is greatly reduced. These factors, together with the special coating applied, make for greater resistance to caking in shipment or in storage. This product flows freely. It is shipped in bulk and in 100-pound, 5-ply bags laminated with asphalt.

"Serving Southern States"

LION OIL COMPANY
CHEMICAL DIVISION
El Dorado, Arkansas

Technical advice and assistance to fertilizer manufacturers in solving their manufacturing problems is available for the asking. Just write.

News From INDIA

- JUTE
- FUNGICIDE
- FERTILIZER

Rise in Jute Goods Production

Jute goods production in India shows an upward trend. The June 1950 yield was 76,500 tons as against 72,200 in the previous month. Production figures for January and February 1950 are 71,000 and 72,000 tons, respectively.

Of total production in June the hessians output aggregated 29,000 tons and sackings amounted to 44,700 tons. Other manufactures totalled 2,800 tons.

Production in the 1949–50 season (July to June) by member mills of the Indian Jute Mills Association amounted to 824,200 tons. Consumption of raw jute during this period is estimated at 481.3 million bales. In spite of practically a halt in the arrival of raw jute from East Pakistan since September 1949, Indian mills were able to work without interruption throughout the season.

India: Fungicide

An effective cure for the "lead disease" which causes serious damage to coconut palms has been discovered by the Indian Central Coconut Committee's research station at Kayankulam in Travancore.

Results of the experiments show that if copper fungicide is sprayed three times a year on the coconut leaves the disease can be controlled satisfactorily. Demonstrations of the new method were started on cultivators' fields October 1949 on a no-profit, no-loss basis. By the end of May about 39,000 trees were sprayed in the first round and about 18,000 in the second.

Travancore-Cochin Research

A new station for fertilizer and agricultural research in tapioca, sweet potato and other tubers will be established at Trivandum (Travancore-Cochin). The existing University Research Plant where experiments are now being conducted in tapioca plants from Brazil and Indonesia will be merged with the new station. Plant food results will be stressed in the research efforts. American and British agricultural museums will serve as models for the new scientific institute to be erected at Poona (Bombay state). Records will be maintained in world-wide agricultural progress and modern training facilities such as motion pictures will be provided.

India Develops Market

Measures are being taken to develop Calcutta as a world tea market and the Indian Government has sponsored the manufacture of artificial fertilizers. Forty thousand tons of sulphate of ammonia, required for the period of July–December 1950, has been allotted to the industry.

India's estimated tea production this year is about 590 million pounds—over half the estimated world output. India this year will export about 260 million pounds to the U. K., her chief buyer.

Agronomy Meeting

The 3-day meeting of the Northeast branch of the American Society of Agronomy at Ithaca, N. Y., last month included several outstanding addresses. The more than 125 members who attended took a number of field trips which included the U. S. Plant, Soil and Nutrition Laboratory, Caldwell Field, and Mt. Pleasant Farm. An inspection was made of forage crops. Conferences on corn and forage crops, and on research, teaching and extension programs were held. W. C. Libby of the University of Maine was elected president. The 1951 meeting will be held at Pennsylvania State College in conjunction with the national meeting.

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They are ideal for products needing special protection against contamination, sifting, or loss or absorption of odors or moisture. Bemis Waterproof Bags are resistant to oil, acid, tears, punctures and insect infestation. They're economical, too. Investigate.

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FARM PORTRAIT NO. 8

Soils, too, can be stubborn!

Yet, even the most stubborn soil will respond ultimately to the proper care and treatment.

An important element in such care and treatment is the use of the correct chemical fertilizer. This often proves to be one compounded with potash — frequently with Sunshine State Potash, a product of New Mexico. For potash is not only a soil nutrient, it is a crop strengthener as well, helping to resist disease and drought.

SUNSHINE STATE POTASH — PRODUCT OF NEW MEXICO U.S.A.

Reg. U. S. Pat. Off.

HIGRADE MURIATE OF POTASH
62/63% K_2O
GRANULAR MURIATE OF POTASH
50/52% K_2O
MANURE SALTS 20% MIN. K_2O

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PACIFIC COAST FERTILIZER "ROUND-UP"

Vancouver Experiment Station

Latest developments in fertilizers, irrigation, and culture of a wide variety of crops were on parade August 4 at the Southwestern Washington Experiment Station.

This is the date for the annual Farmers Field day at the Experiment Station. Superintendent D. F. Allmendinger and associates put on an agricultural show to demonstrate results of experiments aimed at improvement of agriculture in the southeastern part of Washington.

Here's a round-up of some of the experiments of special interest to AMERICAN FERTILIZER readers.

There's a recently installed irrigation system for vegetable crops, including corn, beans, potatoes, cucumber and broccoli. These same tests plots have been used for fertilizer experiments. Visitors to the Station could readily see the effect of correct fertilizer placements by observing the differences in growth in various plots.

The Southwestern Washington station is justly proud of this year's peach crop, one of the few good ones in the area. Visitors were able to compare 44 different varieties of peaches being tested for local adaptation.

One of the problems connected with growing black raspberries is pruning. Workers at Vancouver are experimenting with methods of pruning the main canes and laterals of black raspberries in order to increase the yield.

In addition to these pruning experiments the results of extensive fertilizer work with both red and black raspberries was shown. Many varieties of most of the small fruits were shown in test plantings. New plantings of Marshall and the new Northwest strawberry were on display as well as fertilizer and plant spacing tests with strawberries.

How to Eliminate Sage

Writers of western songs will be unhappy to hear this, but Lake county Oregon residents are making plans again to do something about ridding some of their county's range land of sagebrush. The increased use of fertilizers is one answer according to Elgin Cornett, county agent.

In connection with a county-wide picnic and conservation tour, latest equipment and methods of ridding land of sage were demonstrated near Paisley, August 6. An inspection of pasture improvements during the morning at the ZX ranch followed by the machinery demonstration in the afternoon at the Withers ranch one mile north of Paisley was the schedule for the day. The sage eradication demonstration is a follow-up of a similar demonstration held two years ago at Valley Falls.

Ashcraft-Wilkinson Co.

Fertilizer Materials — *Feeding Materials*

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FOREIGN AND DOMESTIC

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Organic Ammoniates Sulphur

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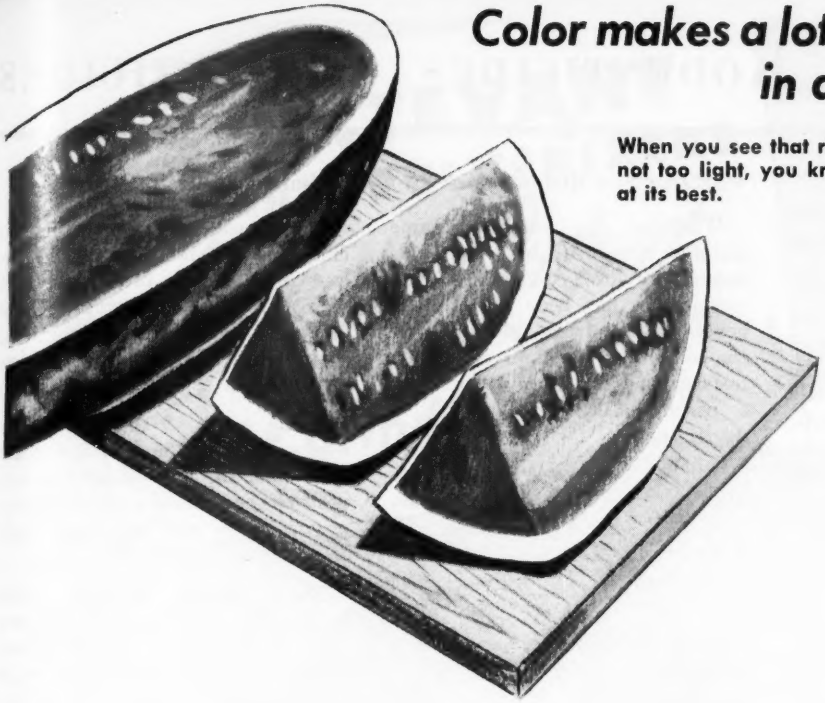
Color makes a lot of difference in a watermelon



When you see that rich red color, not too dark, not too light, you know it's right—watermelon at its best.

The right colors make a lot of difference in the printing of the labels on your fertilizer containers, too.

Here at Raymond we take a lot of pains in seeing that your labels are reproduced in just the right colors to appeal to careful buyers. We know by experience that it pays to supply our customers with top quality shipping sacks.

Give your products Raymond Shipping Sack protection and sales appeal. There is a CUSTOM BUILT Raymond Shipping Sack made in a type, size, and strength ideally suited to your particular packing and shipping need. Phone, write, or wire Raymond today!

THE RAYMOND BAG COMPANY
MIDDLETOWN, OHIO

RAYMOND
MULTI-WALL
PAPER SHIPPING SACKS

AEROSOLS - RODENTICIDES - INSECTICIDES

Lindane Use in Aerosols

R. O. Cowin, Standard Oil Company (Ohio), Cleveland, in a recent talk said that lindane is not any more corrosive to metal and other parts of application equipment than DDT and could be used in aerosol cans if and when approved by the Department of Agriculture.

Lindane acts in three methods, according to Mr. Cowin. They are contact, in which the insecticide comes in direct contact with the insect adult, larvae or egg; stomach poison, in which the insect eats the insecticide, and vapor action, in which the lindane vapors are given off into the air and the insects come in contact with these vapors.

"The contact action and the vapor action," Mr. Cowan declared, "are the two chief ways in which lindane acts as an insecticide. While it is very potent as a stomach poison, most insects are killed by the contact or vapor action before they have an opportunity to ingest the lindane. Most research indicates that lindane acts as a nerve poison, causing a nerve paralysis of the insect."

PHOTOGRAPHS

This magazine is interested in securing plant photographs of every fertilizer plant in the country. If you have photographs we could use in connection with a story about your company please write today. Careful handling and prompt return of all material submitted.

Warfarin New Rodenticide

Warfarin, the common name adopted for (3-(gamma-acetonyl-benzyl)-4-hydroxycoumarin, a new rodenticide, has been released for general consumption sale following the completion of hundreds of field tests carried out since 1949 under a permit of the Department of Agriculture.

The new product is protected by a patent owned by the Wisconsin Alumni Research Foundation. R. J. Prentiss & Co. and S. B. Penick & Co., both of New York, are the distributors of the rodenticide.

Warfarin, which kills by producing hemorrhage, is a slow-acting poison and must be consumed by the rodent over several days' time to kill. It is tasteless and odorless, and is relatively safe as respects humans, pets and domestic animals.

The large-scale testing program on warfarin rodenticides was conducted jointly by Prentiss, Penick and the Wisconsin Alumni Research Foundation in cooperation with the Production and Marketing Administration of the Department of Agriculture, the Fish and Wildlife Service of the Department of Interior, the Public Health Service and the National Pest Control Association. The program is the first in which users of rodenticides were requested to report results achieved.

Indiana Insecticides

Widespread use of new insecticides has created a problem unknown to growers previously, that of residues of certain crops. Users are cautioned to follow directions, says George E. Gould, extension entomologist at Purdue University.

While many of the insecticides released during the past few years have made the controlling of garden pests easier and kill a wider variety of pests, they also last longer than the older insecticides did.

The common Mexican bean beetle, often a serious pest of beans in the home garden, appears in late summer. Both the beetle and larvae feed on the foliage. A second beetle, the bean leaf beetle, also does damage. Both insects can be controlled by the use of a three-quarter per cent rotenone dust or a methyoxychlor dust or spray. Materials should be applied to the underside of the foliage because most of the feeding occurs there.

The striped cucumber beetle is now destroying small cucumber, melon and squash plants. These beetles not only destroy the plants by their feeding, but also spread bacterial wilt disease to these plants. A rotenone-copper dust or a dust or spray made from the new purified grade of DDT will give control. Hydrated lime should not be used, as it causes burning and stunting.

Woodward & Dickerson Inc.

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ROTARY PULVERIZERS
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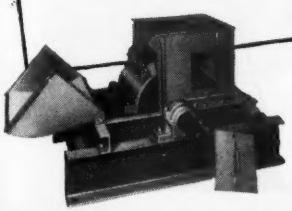
cut grinding costs!

- **Grind Fertilizer Tailings Without Clogging**
- **Easily Accessible for Cleaning**
- **No Daily Accumulation of Unground Tailings**



OPEN DOOR accessibility through drop door and hand holes makes cleaning fast and easy.

Here's a rotary pulverizer for grinding fertilizer tailings that will cut costs and increase tailings output.

The rigid rotating bars smash lumpy tailings against an adjustable breaker plate. These same rotating bars then rub oversize pieces against the plate assuring complete grinding of the tailings. Relief springs prevent stoppage; and a discharge free from restrictive grates eliminates clogging. There is *no* accumulation of unground raw hard pellets. The Sturtevant Rotary Pulverizer is superior to hammer mills because the hammers often stick . . . or cage mills that will not grind small pellets . . . or knives that only slice or shear. It can be used when basing, shipping superphosphate or complete goods. Capacities up to 35 tons per hour of tailings.

Many Sturtevant Rotary Pulverizers were sent out on trial . . . every one was bought . . . *none returned.* Most initial sales have resulted in repeat orders. Write for information today.

STURTEVANT MILL COMPANY

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Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS
CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

Reasons Why You Lose Your Job

Tens of thousands of persons have been fired from their jobs. Few ever learn the real reason for it. Employers are human and you rarely find one who has the heart to tell a man the real reason he is being let out.

Instead, in order to be kind he will almost invariably invent an excuse that will avoid hurt feelings and save his employee from a feeling of inferiority, embarrassment or disgrace.

It may help, however, if we look some valid reasons for being fired squarely in the eye. One man who has interviewed thousands of job-seekers," say I can give you a dozen reasons for dismissal which the average employer will never tell you. These are:"

Laziness. Profit-minded employers do not fire men whose production returns them a profit on their investment. "He profits most who serves best," applies to the employee as surely as it does to the employer.

Disloyalty. The disloyal employee is like the rotten apple in the barrel, spoiling all those around him. The wise employee refuses to listen to the man who bites the hand feeding him.

Intemperance. The intemperate man is unreliable. In the business world, reliability is "the priceless ingredient," the cornerstone of progress as well as lasting success.

Poor Health. Frequent absenteeism works hardship on fellow-workers as much as it does employers. Poor health becomes intolerable.

Poor personality. Some people are born with charm; others must and *can* acquire it. Without friendliness, tactfulness, magnanimity, a sense of generous cooperation, one is likely to find himself out on a limb.

Emotional instability. The person who is overly sensitive, who blows up under pressure, who fancies himself slighted and imagines unintended hurts—is an undependable employee who may be temporarily tolerated as a necessary evil but eventually rides for a fall.

Dishonesty. Dishonesty may take many other forms besides direct misappropriation of funds. A liar and a hypocrite is essentially dishonest. So is a malicious gossip and waster of time—of others' as well as his own.

Immorality. Self-indulgence in immorality is generally recognized as a character weakness inducing failure.

Talkativeness. A desirable employee, like a good actor, knows how to listen to, as well as to deliver, a speech. Many a man has talked himself out of a job and never realized it. Silence at the right time is golden.

Bad disposition. The surly arrogant, ungracious, vituperative employee may think he can vent his ill humor on his fellow-workers—and more likely when least welcome—but he will find himself on his way out.

Unprogressiveness. Inflexibility of mind and inability to change with the times can be manifested by the young, the middle-aged or the old. To succeed, one must be mentally alert and progressive-minded, constantly striving for self improvement.

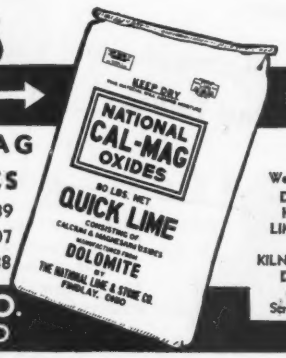
Income mismanagement. The man who is always in debt, who borrows from everyone around him, who repeatedly asks his firm for an advance—in short, who makes it a habit to live beyond his means—may be tolerated for his brilliance, his good looks or his charm, but in the end his weakness of character in mismanaging his finances becomes glaringly apparent and he is replaced.

Salesmen suffering from ennui, a peeve, or a big night are no asset behind the counter. Nothing so maddens a customer, or loses so many sales as a listless sales speech delivered with far off look in the eye.

Jewelry Salesman: "You get the girl—we'll do the rest."

Young Groom: "That hardly seems fair."

CAL-MAG OXIDES
CUT YOUR COSTS WITH



Unexcelled for its superior Dehydrating, Neutralizing, and Curing factors in the preparation of better fertilizers. Write for complete information.

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so you can profit from Phillips 66 Fertilizer advertising in six leading farm publications this fall!

Phillips 66 Ammonium Sulfate can step-up pasture yields . . . lengthen your grazing season!

It's been proved over and over again . . . pastures that are properly fertilized will produce extra pounds of milk or beef per acre. What's more, if you top-dress with Phillips 66 Ammonium Sulfate this fall, your pastures will be ready for grazing earlier in the spring.

Phillips 66 Ammonium Sulfate delivers a guaranteed nitrogen content of 21%. Its uniform, free-flowing crystals insure easy application.

Act now, and increase the profits from your dairy or beef cattle. You can get Phillips 66 Ammonium Sulfate from your regular supplier.

PHILLIPS CHEMICAL COMPANY
A Subsidiary of Phillips Petroleum Company
SALES DIVISION

THIS ADVERTISEMENT

(¾ page in color) will stimulate increased demand for Phillips *66* Fertilizers for direct application on pastures this fall. As it appears in September Progressive Farmer, this advertisement will feature Ammonium Sulfate. In other September publications the emphasis will be on Ammonium Nitrate. Place your order *now* for adequate stocks of these famous Phillips *66* Fertilizers!

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AMMONIUM SULFATE • AMMONIUM NITRATE • NITROGEN SOLUTIONS • ANHYDROUS AMMONIA

BRITISH . . .

(*Continued from page 8*)

eliminate trimming, the small bulk loader made by Stephens-Adamson was widely used and proved a most versatile machine. A machine of similar type is now available in the United Kingdom.

THE INCREASING use of paper sacks was, as in Britain, a main feature of packing technique, semi-automatic gross weighers being in frequent use in conjunction with union special sewing machines. Opinion appeared to be divided on the relative merits of valve and open mouth filling. As far as could be ascertained the rate of output and cost of operation showed little difference between the two methods. In view of the rapid strides made in mechanization in other parts of the factories it was surprising to find comparatively little development in the mechanization of the handling of bagged finished products and little, if any, advance over British methods was apparent. Only in one or two cases were finished bags handled mechanically into transport vehicles. In this connection a small mechanical fork lift truck, capable of carrying up to 20 bags and stacking without the use of pallets in rail car or storage shed may be mentioned.

Owing to different methods of measurement of efficiencies accurate figures on man hours per ton were difficult to obtain, but from those that were obtained some things were apparent.

1. *Acid manufacture.* American practice was slightly better than British. This was mainly due to the widespread use of sulphur as a raw material, though centralization of controls was a contributing factor.

2. *Superphosphate manufacture.* Productivity in the United States was greater than at home, only British modern continuous processes approaching American performance. This was mainly due to the high hourly throughput achieved in most factories.

3. *Compound manufacture, packing and despatch.* American practice showed substantial advantage over comparable British Performance, only highly mechanized granulation operations equalling their figures. This is obviously due to the wide use of mobile equipment for recovery of materials from stock pile to mixing and packing plants.

4. *Handling and storing of raw materials* were not strictly comparable owing to the different lay-out of American factories and the use of large capacity railway rolling stock. These two factors give considerable advantages to the Americans which are clearly illustrated in the figures obtained.

The concentration of the industry in the Southern States leads to the employment of a large proportion of coloured labour in that area. Operations have been simplified to plain "rule of thumb" instructions to enable satisfactory work to be carried out by this quality of labour. In the Northern States, where white labour is more generally employed at much higher cost, mechanization is intensified to effect economies in manpower.

Union organization in the industry was in its infancy, but where it existed all employees, irrespective of trade, were served by one union. This had the advantage of standardizing working conditions within the factory, such as overtime rates, holiday payments, etc., but on the other hand the standard of training and efficiency of craftsmen was given less attention than in the appropriate craftsmen's unions in Britain. The general procedure where unions existed was for local negotiation directly between the union and the factory management for an agreement subject to review annually. There were no negotiations on a national scale such as take place in the United Kingdom.

Although the average basic rate of pay in the industry appears high at $1.10 per hour, varying from a minimum of 60 cents under Federal Law to as high as $2.00, this is largely off-set by a much higher cost of living than in the United Kingdom. Nevertheless, the average American worker has approximately 17 per cent more of his earnings available for non-essential expenses than his British counterpart.

The majority of factories operate a 40-hour week from Monday to Friday inclusive, shift work being much less common than at home. This is made possible by higher hourly rates of output, usually more than twice that of a normal British plant.

Incentive payments of a direct character were not made. Almost

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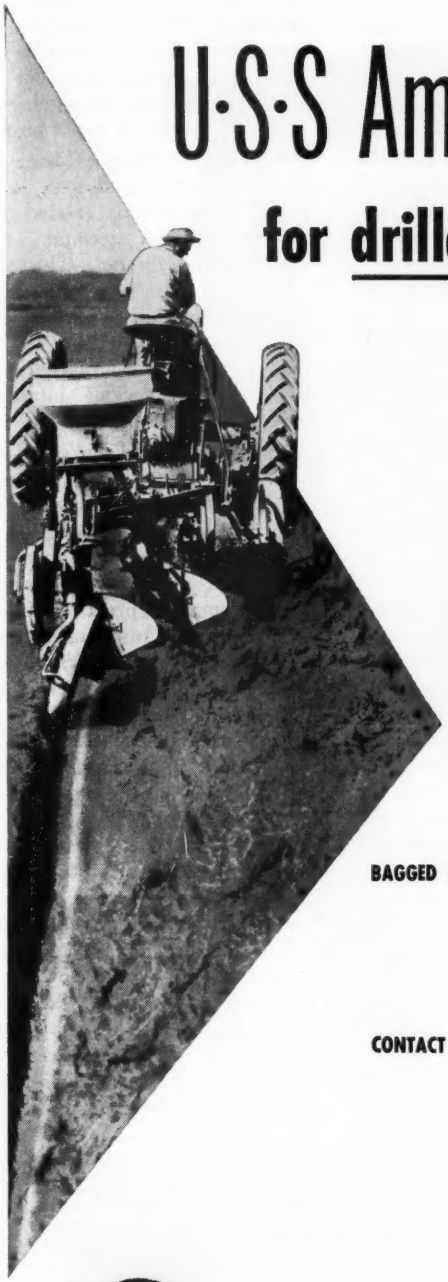

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all our old contract or piecework systems had been abandoned in favour of rewards in basic rates of pay for more skilled operations. This system undoubtedly stimulated the keen spirit of individual ambition which was a striking feature of American life generally.

Except in the larger corporations canteens were far less common than in Britain. On the other hand, washing and changing facilities were always provided and of a better quality than is usual here. The psychological effect on the individual of being able to go to and from work in a tidy and clean condition was apparent in the cheerful outlook of the workers. Every factory had automatic machines for dispensing soft drinks and candies which were welcomed by both workers and staff. It was unthinkable in American practice for any stoppage of work to take place for refreshment during the normal working hours and the mid-day lunch break was often reduced to a minimum.

On the whole safety precautions were much less complete in practical application than ours, but in most places the operatives were much more safety conscious and accident rates appeared to be surprisingly low. The opinion was expressed by some Americans that to make a worker conscious of the dangers where unguarded machinery existed was often more effective in accident prevention than physical protection such as guards. The display of danger notices, the careful analysis of lost time accidents and competition between factories for the length of accident-free operation were excellent features in safety procedure.

Sickness and accident benefits and pension scemes were available in most works, and provided somewhat similar benefits to those existing in the United Kingdom. Pension schemes were normally non-contributory, premiums to insurance companies being paid by the companies concerned.

The relationship between management and labour was everywhere very good. Management and labour were highly production conscious, and any device to reduce the human effort in operations was heartily welcomed by both.

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In Chapter 10 a limited picture is given of the management organization of both large corporations and small individually-owned companies. The main features were first, the surprisingly small staffs required to operate their producing and selling offices and, second, the extensive use of power-driven and other mechanical office equipment. The strong competition which exists within the industry has made every company conscious of the need for reducing overhead expenses, and this is undoubtedly the salient point in staff economy. In large central offices very careful study had been given to lay-out and accommodation was generally much better than is found in comparable companies at home.

Length of service of employees is a major factor in consideration of promotion and most companies fill vacancies wherever possible from their own personnel, frequent interchange of staff members being practised to fit them for senior posts.

In many companies bonus systems for senior staff were in existence, often directly related to the profit and loss account of the operation in a district. This system not only gave executive officers direct interest in the efficiency of their particular section of the company but also encouraged them to take a much wider interest in general commercial practice.

The extremely keen competition which, as pointed out, is a major feature of the American industry makes all companies very cost conscious. Budgetary control and systems of costing against standards were common practice in large corporations. In small producing works elaborate costing systems were not operated, but close watch was kept not only on direct process and maintenance costs but on materials usage and wastage, which in many cases were regarded as of primary importance.

Because of the strong anti-trust laws in the United States, which impose heavy penalties on the discussion of costs and selling prices outside individual organizations, manufacturers were unwilling to disclose cost figures. Nor would those figures be of much value to us in view of the great differences in living standards, raw material costs, freight charges, etc.

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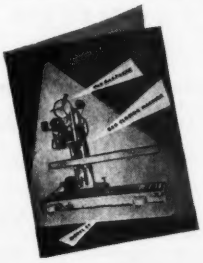

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Pasture Tour . . .

(Continued from page 12

of fat. Forage is composed predominantly of Ladino and alfalfa. One field is in a 15-year-old stand of Ladino. Annual fertilizer used amounts to about 75 tons, mainly 0–20–20. In addition to their own hay, some 150 tons are sold. The first trench silo built in Massachusetts was constructed on this farm 4 years ago.

Next we drove to the **Harry Hertel & Son Farm**—This farm of 58 acres of improved land is divided into 10 plots. There is 1.23 acres per animal unit. In addition to field grazing, the farm produces 160 tons of grass silage and 20 tons of hay. Extra alfalfa is purchased. This farm won third place in the New England Pasture Contest in 1948. The amount of fertilizer used amounts to ½ ton per animal unit of a 4–8. 6–9 average analysis in addition to the manure produced.

From this prize winner farm the auto group set their tires humming toward the Vermont pastures and we made our first stop at Bellows Falls to see the **J. B. Abbott Farm**—The farm consists of 400 acres, about 125 cropland and improved pasture and the remainder wasteland and woods. There are 60 head of cattle, half milking and 30 head of young stock. The average production for the year ending in April 1950 was 12,936 pounds of milk and 514 pounds of fat.

The next stop was the **Alfred W. Kingsbury & Son Farm**—In 1949, 26 cows (purebred Guernseys) produced an average of 3,992 pounds of 4-per cent milk. The first Ladino was seeded in 1939. For the past 3 years, Ladino-brome has been used. Fields are small and grazing is well controlled; plots are clipped after cows have grazed them. Total tillable land is 47 acres with 20 acres being used for totated pasture. All land is top dressed with the equivalent of an 0–20–20 after first crop of hay or pasture. Irrigation is also used to increase production.

By this time the Tour group membership had shifted and the real "Down East Yankees" were guiding our gasoline buggies as we crossed into New Hampshire. First stop was at the **Reed Bros. Farm**—The Reed brothers took over this farm in 1947 and since that time they have been building up both their forage production and their herd. The system of rotating pastures is highly efficient. The set-up was considered one of the best in New England by the New England Green Pastures judges last year.

Next on the New Hampshire Tour was the **Leland Slayton Farm**—In 1947 and 1948 Mr. Slayton won first place in the New Hampshire Green Pastures Program. His seedings, made in 1949, came through the drought very well even though no rain at all fell for 3 months last summer. The secret of success on this farm, in producing good Ladino and alfalfa-brome, has been good fertilization and management.

Tour members saw a "leader" at the **Richard Farm**—This was the first farm in the State to use irrigation on grassland. One alfalfa field produced an estimated green weight of more than 25 tons per acre in 1948. The stand on this field now, although heavily fertilized and manured, is spotted. The reason for the dying out is not known. Many of the plants, however, exhibited a disease condition.

Some excellent work with pastures was seen at the **University of New Hampshire Farm**—The success of draining and reclaiming unusually wet land was most interesting. Although rather expensive the results, judging by legume stands, were at least promising. On the agronomic plots the varietal trials, expecially with different seed sources of Ladino, showed great differences.

As the Tour moved into the final day some very fine results were observed in Maine at the **Harold J. Shaw Farm**—The home farm comprises approximately 40 acres, on which 42 Holstein cows are kept and milked three times daily. The basis of the forage program has been Ladino, for pastures first, for silage second, and any surplus goes into hay. Filling the silos is Mr. Shaw's first concern—this operation begins in early June. His fields have been so well limed and fertilized, that under normal rainfall conditions, the taking of the first crop early has given him an abundance of second crop to graze. The seeding down program has included oats with cows grazing the oats about the middle of June. Under normal rainfall the Ladino is grazed lightly in the fall.

And the final stop was made at the **John Roberts & Son Farm**—This farm comprises 45 acres. Dairying is the leading enterprise. The herd is made up of approximately 40 head of registered Guernseys. Ladino clover forms the basis of the pasture and grassland program, although a small acreage of alfalfa has been grown for many years. Grass and corn silage are both stored for winter feed. A few years ago another farm was purchased. Through fertilization and renovation this farm is fast becoming a useful addition in the development of a large herd and the expansion of grassland practices which the operators previously found impossible to do on limited acreage.

And that's what happened to your AMERICAN FERTILIZER reporter on The New England Pasture Tour.

Potash Research

Problems involved in potash fertilization of Arkansas soils used for pasture and forage crops will be investigated by the Arkansas Agricultural Experiment Station, says Dr. Lippert S. Ellis, station director, The new research is made possible under an agreement entered into recently by the University of Arkansas College of Agriculture and the American Potash Institute.

The investigations will be carried on by Joseph O. Legg, recently-appointed graduate assistant, under supervision of Dr. R. L. Beacher, assistant professor of agronomy. Mr. Legg graduated from the University in January, receiving the B. S. A. degree with highest honors. He will conduct the research while carrying on graduate study.

One of the problems encountered in determining potassium needs of Arkansas soils is that the rapid soil tests commonly used for determining potassium may not accurately indicate the amount of potassium actually available for crop use, Dr. Beacher pointed out. Part of the new research will be concerned with developing a rapid soil testing procedure which will indicate the actual potassium fertility status of the soil.

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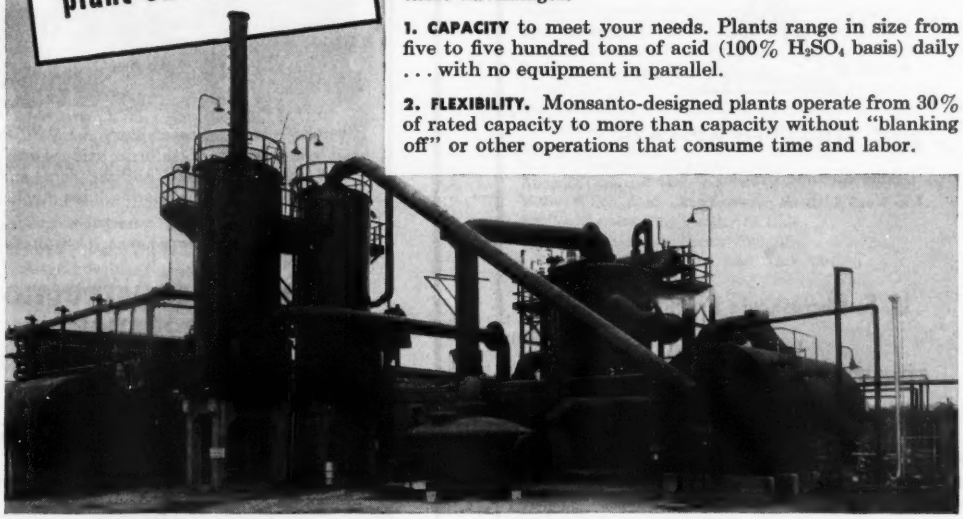

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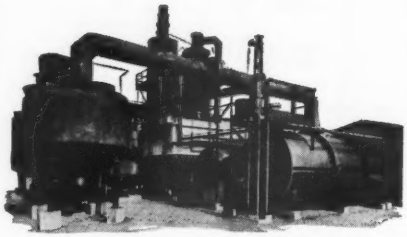

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Sturtevant Mill Company, Boston, Mass.

BUYERS' GUIDE

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- Link-Belt Company, Chicago, Ill.
- Sackett & Sons Co., The A. J., Baltimore, Md.
- Stedman Foundry and Mach. Works, Aurora, Ind.
- Sturtevant Mill Company, Boston, Mass.
- Universal Vibrating Screen Co., Racine, Wis.

SEPARATORS—Air
- Sackett & Sons Co., The A. J., Baltimore, Md.
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SPRAYS—Acid Chambers
- Monarch Mfg. Works, Inc., Philadelphia, Pa.

SULPHATE OF AMMONIA
- American Agricultural Chemical Co., New York City
- Armour Fertilizer Works, Atlanta, Ga.
- Ashcraft-Wilkinson Co., Atlanta, Ga.
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- Barrett Div., Allied Chemical & Dye Corp., New York City
- Jackle, Frank R., New York City
- Koppers Co., Inc., Tar Products Div., Pittsburgh, Pa.
- Lion Oil Co., El Dorado, Ark.
- McIver & Son, Alex. M., Charleston, S. C.
- Northern Chemical Industries, Inc., Searsport, Me
- Phillips Chemical Co., Bartlesville, Okla.
- United States Steel Corp., New York City
- Woodward & Dickerson, Inc., Philadelphia, Pa.
- Woodward Iron Company, Woodward, Ala.

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- Texas Gulf Sulphur Co. New York City

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- Ashcraft-Wilkinson Co., Atlanta, Ga.
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- International Minerals & Chemical Corporation, Chicago, Ill.
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- Northern Chemical Industries Inc., Searsport, Md.
- Southern States Phosphate Fertilizer Co., Savannah, Ga.
- Summers Fertilizer Co., Baltimore, Md.
- U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla
- Virginia-Carolina Chemical Corp., Richmond, Va.

SUPERPHOSPHATE
- American Agricultural Chemical Co., New York City
- Armour Fertilizer Works, Atlanta, Ga.
- Ashcraft-Wilkinson Co., Atlanta, Ga.
- Baker & Bro., H. J., New York City
- Davison Chemical Corporation, Baltimore, Md.
- International Minerals & Chemical Corporation, Chicago, Ill.
- Jackle, Frank R., New York City
- McIver & Son, Alex. M., Charleston S. C.
- Northern Chemical Industries, Inc., Searsport, Me.
- Southern States Phosphate Fertilizer Co., Savannah, Ga.
- Summers Fertilizer Co., Baltimore, Md.
- U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
- Virginia-Carolina Chemical Corp., Richmond. Va.

SUPERPHOSPHATE—Concentrated
- Armour Fertilizer Works, Atlanta, Ga.
- International Minerals & Chemical Corporation, Chicago, Ill.
- U.S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
- Virginia-Carolina Chemical Corp., Richmond, Va.

TANKAGE
- American Agricultural Chemical Co., New York City
- Armour Fertilizer Works, Atlanta, Ga.
- Ashcraft-Wilkinson Co., Atlanta, Ga.
- Baker & Bro., H. J., New York City
- Davidson Commission Co., The, Chicago, Ill.
- International Minerals & Chemical Corporation. Chicago, Ill.
- Jackle, Frank R., New York City
- McIver & Son, Alex. M., Charleston. S. C.
- Woodward & Dickerson, Inc., Philadelphia, Pa.

VALVES
- Atlanta Utility Works, The, East Point. Ga.
- Monarch Mfg. Works, Inc., Philadelphia, Pa.

Alphabetical List of Advertisers

American Agricultural Chemical Co., New York City 2
American Potash and Chemical Corp., New York City 3
Arkell & Smiths, Canajoharie, N. Y. ..... —
Armour Fertilizer Works, Atlanta, Ga. 20
Ashcraft-Wilkinson Co., Atlanta, Ga. 24
Atlanta Utility Works, The, East Point, Ga. 34
Baker & Bro., H. J. New York City 4
Barrett Division, Allied Chemical & Dye Corp., New York City ..... Front Cover
Baughman Mfg. Co., Jerseyville, Ill. 15
Bemis Bro. Bag Co., St. Louis, Mo. 1, 22
Bradley Pulverizer Co., Allentown, Pa 36
Chemical Construction Corp., New York City 36
Commercial Solvents Corp., Agricultural Div., New York City 19
Davidson Commission Co., The, Chicago, Ill. 30
Davison Chemical Corporation, Baltimore Md. ..... —
Gascoyne & Co., Inc., Baltimore, Md. 40
Hayward Company, The, New York City 40
Hough Co., The Frank G. Libertyville, Ill. ..... —
International Minerals & Chemical Corporation, Chicago, Ill. ..... 2nd Cover
International Paper Co., Bagpak Div., New York City 33
Jaite Company, The, Jaite, Ohio ..... —
Jackle, Frank R., New York City 12
Keim, Samuel D., Philadelphia, Pa. 39
Koppers Co. Inc., Tar Products Div., Pittsburgh, Pa. ..... —
Kraft Bag Corporation, New York City ..... Back Cover
Link-Belt Company, Chicago, Ill. ..... —
Lion Oil Company, El Dorado, Ark. 21
McIver & Son, Alex. M., Charleston, S. C. 40
Mente & Co. Inc., New Orleans, La. 36
Monarch Mfg. Works, Inc., Philadelphia, Pa. 40
Monsanto Chemical Co., St. Louis, Mo. 35
National Lime & Stone Co., Findlay, Ohio 28
Northern Chemical Industries, Inc., Searsport, Me. ..... —
Phillips Chemical Co., Bartlesville, Okla. 29
Potash Co. of America, New York City ..... 3rd Cover
Quaker Oats Company, Chicago, Ill. ..... —
Raymond Bag Co., Middletown, Ohio 25
Sackett & Sons Co., The A. J., Baltimore, Md. 36
Schmutz Mfg. Co., Louisville, Ky ..... —
Shuey & Company, Inc., Savannah, Ga. 40
Southern Lead Burning Co., Atlanta, Ga. ..... —
Southern States Phosphate & Fertilizer Co., Savannah, Ga. ..... —
Spencer Chemical Company, Kansas City, Mo. ..... —
Stedman Foundry and Machine Works, Aurora, Ind. 32
St. Regis Paper Co., New York City 17
Sturtevant Mill Co., Boston, Mass. 27
Summers Fertilizer Co., Baltimore, Md ..... —
Tennessee Corporation, Atlanta, Ga. ..... —
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla. 36
United States Potash Co., New York City 23
United States Steel Corp., Coal Chem. Sales Div., New York City 31
Virginia-Carolina Chemical Corp., Richmond, Va. 18
Wiley & Company, Inc., Baltimore, Md. 40
Woodward & Dickerson, Inc., Philadelphia, Pa. 26

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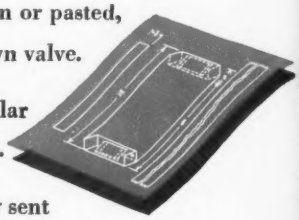

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